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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,134	02/06/2004	Carl M. Hoffmaster	05516.089003	8389

7590 12/15/2004

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EXAMINER

DANG, HOANG C

ART UNIT PAPER NUMBER

3672

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,134

Applicant(s)

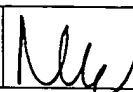
HOFFMASTER ET AL.

Examiner

Hoang Dang

Art Unit

3672



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 201-218 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 201-218 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 201-204, 206, 207, 210-212, 217 and 218 are rejected under 35 U.S.C. 102(b) as being anticipated by Hailey (US 5,174,374).

Hailey shows an expandable reaming tool comprising two reamer pads 24a and 24b movable between a retracted position and an expanded position; at least one blade (30a, 30b) formed on at least one of the reamer pads; a plurality of cutting elements 55 (column 2, lines 36-44 and 62-68).

It is noted that since the two blades (24a and 24b) are disclosed as being identical (column 1, lines 28-30 and line 2 of the abstract), the axial force, lateral force, work or/and mass between the two blades are substantially balanced as recited.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3672

4. Claim 207-210, 213-215, 217 and 218 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Hailey '374 in view of Andrews (US 4,431,065).

Hailey discloses the invention as claimed except for the type of cutting elements. Andrews discloses an expandable reaming tool comprising expandable blades as that of Hailey. However, Andrews teaches providing the reaming blades with cutting elements including a tungsten carbide body, a tungsten carbide substrate and a layer of polycrystalline diamond so that a fresh sharp cutting edge is presented continually during under-reaming (see column 6, lines 4-20 and column 1, lines 21-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use cutting elements as claimed in view of the teaching of Andrews for the advantage pointed out above.

The examiner takes the Official notice that:

- it is well known in the art to arrange cutting elements to have a backrake angle. The degree of backrake angle depends on the location of the cutting element of the bit face and the type of formation being cut. It is not uncommon to mount cutting elements to have backrake angles of greater than 20 degrees as called for in claim 208 (especially for the cutting elements closer to the gage surface of the bit and in a bit for drilling a harder formation);
- it is also well known to provide a drill bit with cutting elements having different backrake angles as called for in claim 209. Cutting elements closer to the center have a smaller backrake angle than the ones closer to the gage area;
- it is also common to use cutting elements having a diameter other than 13.0 mm as called for in claim 210;

Art Unit: 3672

- it is also known in the drag type drill bit art to form a drill bit body or/and blades or/and the gage area from a matrix material (e.g., powdered tungsten) impregnated with diamond material as called for in claims 213, 214, 217 and 218 to enhance their wear resistance, thereby extending their service life.

5. Claims 201-204 and 206-218 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews '065 in view of view of Beaton et al (US 6,269,893) or Huang et al (US 6,516,293).

Andrews '065 discloses the invention as claimed except that the cutting elements are not disclosed as being arranged such that the axial force, lateral force or mass is balanced. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange cutting elements of Andrews '065 so as to have the axial forces, lateral forces, work or/and mass balanced as claimed in view of the teaching of Beaton et al (see column 5, line 32 through column 6, line 10) or Huang et al (see column 13, lines 51-61) in order to improve drilling stability or/and drilling performance.

The examiner takes the Official notice that:

- it is well known in the art to arrange cutting elements to have a backrake angle.

The degree of backrake angle depends on the location of the cutting element of the bit face and the type of formation being cut. It is not uncommon to mount cutting elements to have backrake angles of greater than 20 degrees as called for in claim 208 (especially for the cutting elements closer to the gage surface of the bit and in a bit for drilling a harder formation);

- it is also well known to provide a drill bit with cutting elements having different backrake angles as called for in claim 209. Cutting elements closer to the center have a smaller backrake angle than the ones closer to the gage area;
- it is also common to use cutting elements having a diameter other than 13.0 mm (depending on the size of the drill bit) as called for in claim 210;
- it is also known to provide redundant cutters if desired to extend a drill bit service life (at a higher cost) as called for in claim 212
- it is also known in the drag type drill bit art to form a drill bit body or/and blades or/and the gage area from a matrix material (e.g., powdered tungsten) impregnated with diamond material as called for in claims 213, 214, 217 and 218 to enhance their wear resistance, thereby extending their service life.

6. Claim 205 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hailey '374 or Andrews '065 in view of Beaton et al '893 or Huang et al '293 as applied to claim 201 above, and further in view of Hansen et al (US 5,979,576) or Griffin et al (US 6,142,250).

Hailey discloses the invention as claimed except for the presence of a "vibration damping insert". However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Hailey a vibration damping insert as claimed because it is well known in the well drilling art to provide such an insert to enhance the stability of the drill bit or to minimize bit whirl as evidenced by Hansen et al (see column 6, lines 19-26) or Griffin et al (see column 5, lines 41-51).

Conclusion

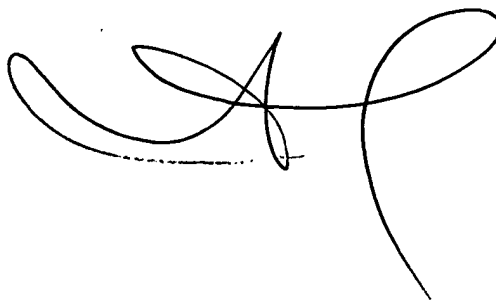
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang Dang whose telephone number is 703-308-2149. The examiner can normally be reached on 9:15-5:45 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Bagnell can be reached on 703-308-2151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hoang Dang
Primary Examiner
Art Unit 3672

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke, positioned below the printed name and title of the examiner.